*AMENDMENTS TO THE TITLE*

Replace the title with:

PHOTOMASK HAVING CENTRAL AND PERIPHERAL LINE PATTERNS

*AMENDMENTS TO THE SPECIFICATION*

Replace the paragraph beginning at page 1, line 15 with:

Generally in the manufacture of a semiconductor device, pattern transfer using a lithographic process is performed in various stages. In this process, light from an exposing light source is radiated onto a photomask ~~whereon~~ including a desired pattern ~~has been formed, and after it~~. After the light is converged in a projection lens, the converged light is radiated onto a wafer. Thereby, the resist on the wafer is exposed. If the resist used ~~here~~ is a positive-type resist, the exposed region is partially dissolved and removed during developing. Thus, the mask pattern is transferred onto the wafer.

Replace the paragraph beginning at page 1, line 24 with:

During developing, however, flare may be caused by fine irregularity of the projection lens penetrated by the exposing light, or by scattered light. Flare may deteriorate the contrast of the exposing light that plays an important role in the formation of element patterns ~~to~~ and lower the exposing margin in the exposure of the fine patterns, or ~~to~~ may bring about ~~the~~ deterioration of the shapes of fine patterns.

Replace the paragraph beginning at page 2, line 1 with:

Therefore, flare is ~~previously~~ measured for every mask pattern, and ~~the~~ compensation ~~of~~ for the effects of flare during exposing has been tried ~~by measuring~~ using the measured flare.

Replace the paragraph beginning at page 2, line 9 with:

In general, for the calculation of the flare rate~~, a method for calculating the flare rate defined by~~ the Kirk method (box-in-box method) is used. The measurement

of the flare rate by the Kirk method will be described below referring to Figs. 16 to 18C.

Replace the paragraph beginning at page 2, line 13 with:

As Figs. 16 and 17 show, the photomask used for measuring the flare rate by the Kirk method ~~is constituted~~ includes, as in ordinary photomasks, ~~by forming~~ a pattern ~~in~~ on a substrate that is transparent to exposing light ~~with~~ comprising a light-shielding film such as a chromium film. The layout of the photomask 300 is as follows: A square central light-shielding portion 304 is first formed on the center of a transparent substrate 302, and an open portion 306, which is the portion wherein no light-shielding portions are ~~formed~~ located, is formed ~~so as~~ to surround the central light-shielding portion 304. On the peripheral portion of the surface of the transparent substrate 302, outside the open portion 306, a peripheral light-shielding portion 308 ~~is formed so as to surround~~ surrounds the open portion 306.

Replace the paragraph beginning at page 2, line 25 with:

~~When~~After the flare rate is measured, the pattern is transferred using the photomask 300. At this time, exposure is changed to transfer the pattern.

Replace the paragraph beginning at page 2, line 28 with:

For example, Fig. 18A shows an ordinary transferred pattern, and, if exposure is increased from this state, the quantity of light received by the photoresist increases gradually, and, as Fig. 18B shows, the quantity of the removed resist ~~increased~~ increases. If the exposure is further increased, the transferred pattern 314 formed by ~~transferring~~ imaging the central light-shielding portion 304 ~~to~~ on the wafer gradually becomes smaller, and, finally, the transferred pattern 314 disappears as shown in Fig. 18C.

Replace the paragraph beginning at page 3, line 14 with:

In other words, in the Kirk method, flare is defined as the ~~percentage~~ ratio of (i) the exposure dosage when the photoresist corresponding to the open portion 306 is removed, adequately leaving the photoresist corresponding to the light-shielding regions 304 and 308, to (ii) the exposure when all the photoresist pattern corresponding to the central light-shielding portion 304 is removed. This is defined utilizing the phenomenon that the larger the flare of the projection lens in the exposing apparatus, the easier the resist pattern of the central light-shielding portion 304 on the center of the mask layout is removed.

Replace the paragraph beginning at page 3, line 24 with:

However, when the Kirk method is used as described above, if the width of the open portion 306 is reduced to some extent, the resist ~~of~~ within the central light-shielding portion 304 no longer disappears. Therefore, in recent ~~exposure~~ exposures for forming increasingly miniaturized patterns, the measurement of the flare rate for the pattern with a narrow opening portion ~~by~~ using the Kirk method ~~becomes~~ has become difficult.

Replace the paragraph beginning at page 4, line 1 with:

In addition, it is considered that flare produced in exposing consists generally of long-range flare and local flare. Further, local flare consists of the factor that causes ~~the~~ dimensional variation of the exposed pattern on the wafer separated by several micrometers to several tens of micrometers due to the non-uniformity of the refraction index (midrange flare), and wave aberration inherent to the projection lens (shortrange flare; the disagreement of phase lag such as an anastigmatic, coma, or spherical flare including ~~defocus~~ defocusing or distortion, caused by reticle transmission of exposing diffractive light through various films, such as ~~reticle~~ reticles

or lenses) is referred to as local flare. In particular, it is difficult to measure local flare using the conventional Kirk method.

Replace the paragraph beginning at page 4, line 13 with:

Concurrent with the miniaturization of patterns, exposing light of shorter wavelength has been used, and the use of an $F_2$ excimer laser as exposing light is taken into account. When an $F_2$ laser is used, a conventional projection lens consisting of quartz ($SiO_2$) cannot provide sufficient transmittance. Therefore, the use of the projection lens using fluorite ($CaF_2$) can be considered. However, the projection lens consisting of fluorite ($CaF_2$) has large non-uniformity of refraction index due to double refraction, and large roughness of the lens surface. Therefore, if fluorite ($CaF_2$) is used as the material of the projection lens, more flare occurs as compared with the conventional lens consisting of quartz ($SiO_2$). The flare is divided into several components ~~according to causes~~, depending upon its cause, and becomes complicated. Therefore, accurate measurement of flare by the Kirk method has become still more difficult.